

**Amendments to the Specification:**

Please replace paragraph [20] beginning at page 6, line 11, with the following:

--[20] Figure 2A is a schematic depiction of a self-priming oligonucleotide (SEQ ID NO:11) in accordance with the invention comprising a 5' leader sequence, a randomized siRNA coding sequence, and a polymerase primer hairpin linker sequence. Figure 2B depicts primer extension of the sequence of Figure 2A to generate a sequence complementary to the randomized siRNA coding sequence and the 5' leader sequence to form a stem-loop structure (SEQ ID NO:12). Figure 2C depicts denaturing of the stem-loop structure of Figure 2B and annealing of a pair of primers (SEQ ID NOS:13 and 14) to facilitate ligation into a vector.--

Please replace paragraph [21] beginning at page 6, line 18, with the following:

--[21] Figure 3 depicts a method for operably linking the denatured stem-loop structure of Figure 2C (SEQ ID NO:12) to a U6 promoter in the correct orientation for transcription of the coding sequence. Primers = SEQ ID NOS:13 and 14.--

Please replace paragraph [22] beginning at page 6, line 21, with the following:

--[22] Figure 4 depicts the cassette of Figure 3 after fill-in of the single-stranded region by gap repair mechanisms in host cells (SEQ ID NOS:12 and 15).--

Please replace paragraph [26] beginning at page 7, line 3, with the following:

--[26] Figure 8 is a schematic showing various steps in the construction of a double-stranded insert comprising a partial expression cassette in accordance with the invention utilizing terminal transferase to generate a priming site for synthesis of the complementary strand as well as a unique restriction site (SEQ ID NOS:9 and 16-21).--

Please replace paragraph [27] beginning at page 7, line 7, with the following:

--[27] Figure 9 shows the ligation of the partial expression cassette of Figure 8 into a vector bearing a modified pol III promoter and the replacement of the majority of the polymerase primer hairpin linker with a sequence encoding the loop region of a hairpin siRNA (SEQ ID NOS:20-27).--

Please replace paragraph [90] beginning at page 17, line 4, with the following:

--[90] The first segment of the self-priming oligonucleotide is a 5' leader sequence, and is represented in Figure 2A by the sequence 5'-GGCCGCNNNNAAAAAA-3'  
5'-GGCCGCNNNNAAAAA-3' (SEQ ID NO:28). This segment contains genetic regulatory elements, including the complement of a transcription termination sequence, as well as sequence units necessary and useful for cloning purposes. The 5' leader sequence is a nucleic acid of from 4 to 27, preferably 10 to 20 nucleotides in length. At least 4 of these nucleotides are consecutive adenylyl residues, preferably located at the 3' end of the leader sequence. (Five consecutive adenylyl residues are shown in Figure 2A). The positioning of these adenylyl residues 5' to the siRNA coding sequence and their function as the complement of a transcription termination sequence will be explained in greater detail below. The remainder of the 5' leader sequence (in the example of Figure 2A, these are the nucleotides 5'-GGCCGCNNNN-3'; SEQ ID NO:29) may comprise optional regulatory elements to control siRNA transcription, a spacer to position

the siRNA gene at an appropriate distance from upstream promoter elements, and/or as restriction sites (or portions thereof) to aid in construction and/or recovery of the siRNA expression cassette or portions thereof. These additional elements typically comprise 20 or fewer bases, and are located 5' to the at least four adenylyl residues. The 5' leader sequence can be synthesized chemically *de novo*, or alternatively created by site-directed mutagenesis of an existing nucleic acid at the desired nucleotide positions (see, e.g., Adelman *et al.*, *DNA*, **2**:183, (1983)).--

Please replace paragraph [96] beginning at page 19, line 2, with the following:

--[96] The third segment of the self-priming oligonucleotide is a "polymerase primer hairpin linker" and is represented in Figure 2A by the sequence, 5'-GGGTTCGccc-3' (SEQ ID NO:30). As can be seen from Figure 2A, this segment is appended to the 3' end of the "sense" coding segment and forms a short stem-loop structure. The sequence shown in Figure 2A is only one of many that may be engineered for use in the practice of the present invention. In general, the "polymerase primer hairpin linker" comprises a sequence represented by the formula, 5'-N<sup>1</sup><sub>n</sub>N<sup>2</sup><sub>m</sub>N<sup>3</sup><sub>n</sub>-3', where

N<sup>3</sup> is complementary to N<sup>1</sup>;

n is a number greater than or equal to 2 (typically, up to 20); and

m is a number from 1 to 40, preferably 3 to 20, more preferably 4 to 9.

In Figure 2A, the sequence GGG is N<sup>1</sup>, TTCG is N<sup>2</sup>, and ccc is N<sup>3</sup>. When n is greater than 5, a restriction site may be included in the sequence to facilitate replacement (at a later stage) of the "polymerase primer hairpin linker" with a shorter linker, as described more fully in Example 5 below. In addition, when n is greater than 5, some mismatches can be incorporated in the sequences of N<sup>1</sup> and N<sup>3</sup> to facilitate this replacement process.--

Please replace paragraph [103] beginning at page 20, line 25, with the following:

--[103] The primer extension reaction continues through the 5' leader sequence and terminates when the polymerase runs off the end of the self-priming oligonucleotide template. Thus, the primer extension reaction also generates a segment that is complementary to the 5' leader sequence (represented by the sequence 5'-ttttnnnnngcgccc-3' (SEQ ID NO:31) in Figure 2B). As noted above, the 5' leader sequence comprises a sequence of at least four consecutive adenylyl residues preferably located at the extreme 3' end of the 5' leader sequence (typically also the extreme 3' end of the expression cassette promoter which may be used in the practice of the invention) which is complementary to a transcription termination sequence. Thus, the primer extension reaction also creates a termination sequence that commences at the 3' end of the siRNA "antisense" strand coding segment and comprises at least 4 thymidyl residues.--

Please replace paragraph [210] beginning at page 51, line 1, with the following:

--[210] A library of self-priming oligonucleotides is chemically synthesized, with each chemically synthesized oligo having the following basic structure:

siRNA-LIBh:

5' - pCGACCACTCTAAAAANNNNNNNNNNNNNNNNGCGTCGCGC - 3'

(SEQ ID NO:3)

Each oligo has the following basic features:

- 1) a phosphorylated 5'-end,
- 2) a C at the 5' end, which functions in subsequent cloning steps as a component of the Sph I generated sticky end after annealing to the oligo Univ-1h (see below),
- 3) a sequence of five As (AAAAA), the complement of the pol III promoter type III termination signal (TTTTT), replacing the last five nucleotides of the natural promoter,

- 4) a randomized sequence of 18 nucleotides (any one of the four nucleotides (dT, dA, dG, dC) at any position), comprising the “sense” coding sequence for a hairpin siRNA; and
- 5) a sequence of GCGTTCGCGC (SEQ ID NO:32), which functions both as a linker and as a primer for the synthesis of the “antisense” strand of the hairpin siRNA gene.--

Please replace paragraph [236] beginning at page 56, line 6, with the following:

--[236] The sequence 5'-CTTCAAGCGAAGAGCGCCTCCG-3' (SEQ ID NO:33) is the N<sup>1</sup> segment of the polymerase primer hairpin linker. The “C” residue at the 5’ end of this sequence will be incorporated into the dsRNA region of the hairpin siRNA to be expressed.--

Please replace paragraph [238] beginning at page 56, line 11, with the following:

--[238] The sequence 5'-CGGAGGCGCTTCGAAGAGAG-3' (SEQ ID NO:34) is the N<sup>3</sup> segment of the polymerase primer hairpin linker. The “G” residue at the 3’ end of this sequence will be incorporated into the dsRNA region of the hairpin siRNA to be expressed. The predicted secondary structure of this self-priming oligonucleotide is illustrated in Figure 8. Some mismatched “base pairs” have been incorporated into the stem structure formed by the N<sup>1</sup> and N<sup>3</sup> segments (boxed residues in Figure 8). These mismatches facilitate the replacement of the N<sup>2</sup> segment with a shorter loop region that will be expressed as a component of the hairpin siRNA (see below). Steps 1-7 of the procedure are illustrated in Figure 8; steps 8-10 are illustrated in Figure 9.--

Please insert the accompanying paper copy of the Sequence Listing, page numbers 1 to 13, at the end of the application.

Appl. No. 10/628,587  
Amdt. dated February 5, 2004  
Reply to Notice to File Missing Parts of November 5, 2003

PATENT

**Amendments to the Drawings:**

The attached sheets of drawings include changes to Fig. 8 and Fig. 9. These sheets, which include Fig. 8 and Fig. 9, replace the original sheets including Fig. 8 and Fig. 9. In Fig. 8 and Fig. 9, word processing errors resulting in text wrap-around have been corrected in the nucleotide sequence portions.

Attachment A: Replacement Sheets

Attachment B: Annotated Sheets Showing Changes